

PROTECTING YOUR HEART

METROPOLITAN LIFE INSURANCE COMPANY

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*Prepared with the
Cooperation and Advice of the
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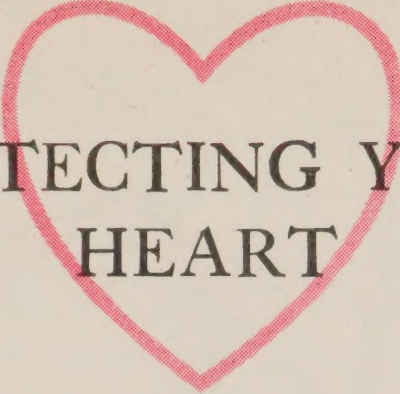
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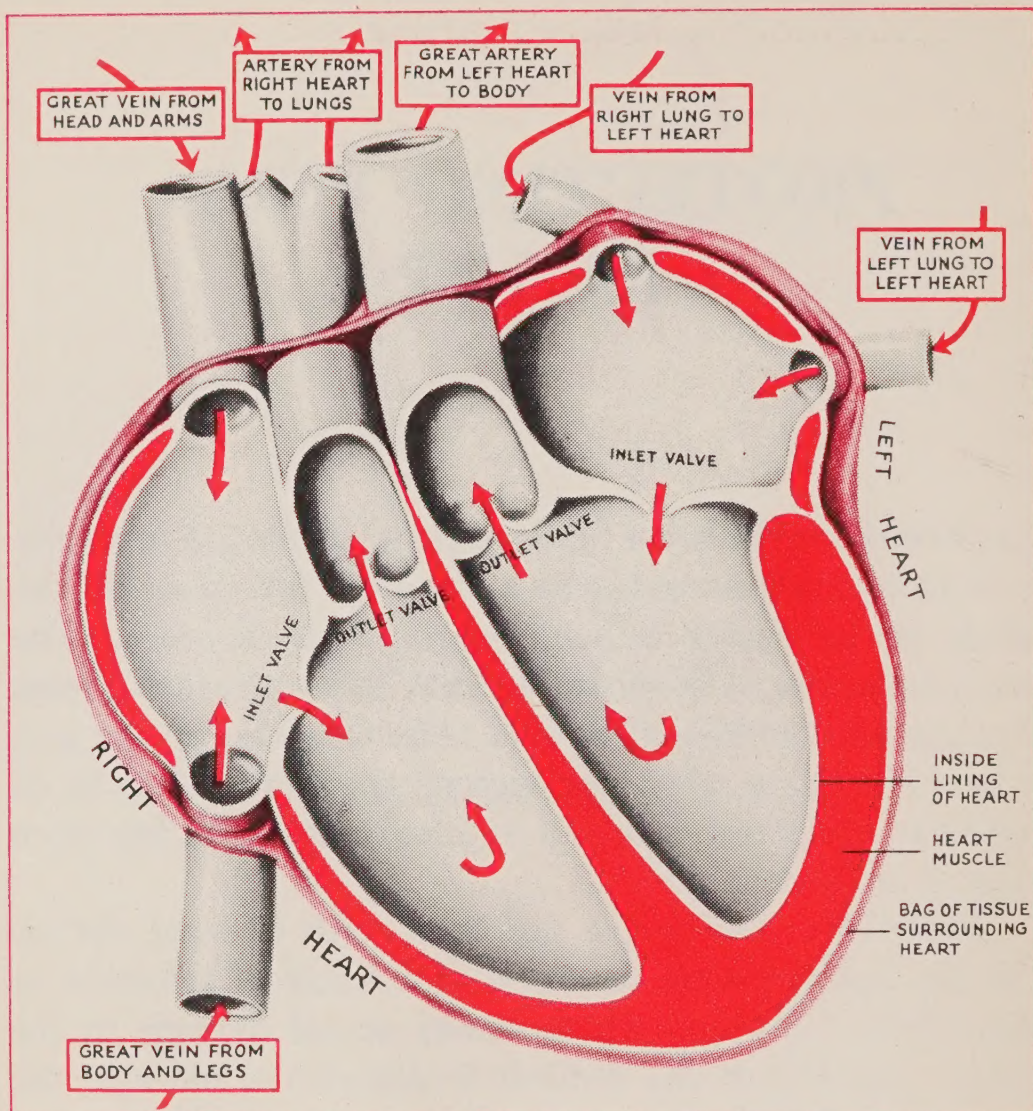


PROTECTING YOUR HEART

JUST consider the heart for a moment. Although normally it is only about as big as a clenched fist, your life depends on its ability to keep continuously at work. The heart never sleeps, never loafs, never takes a vacation from the beginning of life to the end. The only rest it ever gets is between beats. And yet with all the work it has to do the heart does not give out suddenly unless it has been injured or ill-treated.

Relatively few people are born with a heart defect. Usually heart disease develops as a result of infection or some other condition which causes actual damage to the heart. Aside from the natural breakdown of old age, the heart may usually be protected from injury. Even after heart disease has developed, it may often be arrested by intelligent care.

The operation of the heart is controlled automatically by the involuntary nervous system—the division of the nervous system which governs the action of all structures and organs not under the control of the will. But although we do not consciously direct the operation of the heart, we are in many ways responsible for its good conduct. To know how to protect the heart it is necessary to know something about it and how it is affected by the things we *can* control.



THE heart is a powerful hollow muscle divided, by a wall down the middle, into two main divisions—a right and a left. Each division has two chambers which work together as a unit. The blood stream flows from the body into the right side of the heart through veins. From there it is pumped to the lungs where it gets rid of a waste gas (carbon dioxide) collected from the body cells and picks up a load of oxygen to carry to the body cells. After passing through the lungs the blood stream flows into the left side of the heart from which it is pumped to the body through arteries.

The drawing on this page is not an exact representation of the heart in cross section, but rather a pictorial diagram to show the course taken by the blood from the body → to the heart → to the lungs → back to the heart → and out to the body again.

The Healthy Heart and How It Works

NOT a single living cell in the body can exist for more than a few minutes without oxygen. Every cell must have food and water. Every cell produces wastes which must be removed.

Most of the cells of the body are fixed in one place. They cannot move about to obtain supplies of oxygen, food, and water and to get rid of wastes. Everything they need must be carried to them; everything they must get rid of must be carried away from them. The blood is the great common carrier of the body, and the heart is the pump which keeps the blood moving in a steady stream through an intricate system of blood vessels to keep the body alive.

Blood is forced through the blood vessels by the contractions or "beats" of the heart. After each contraction the heart has a split second of rest before it beats again. During the rest period after each beat, blood flows into the heart through inlet valves. As the heart tightens on its contents at the next contraction, the inlet valves close, preventing a back flow, and the outlet valves open. Through these open valves the blood is driven out of the heart into the arteries which distribute it to all parts of the body.

The arteries have relatively thick elastic walls which stretch to accommodate each fresh load of blood driven out by the heartbeat. In the rest period between beats the stretched elastic walls recoil and thus help to press the blood continuously onward. By the term "blood pressure" is meant the pressure exerted by the blood on the walls of the arteries.

The Rate of the Heartbeat

The heart is constantly pumping blood at a rate which increases or decreases with the varying activity of the body. From experience you know that muscular exercise increases the rate of the heartbeat. This insures the pumping per minute of an amount of blood which may be four times as great as when the body is at rest. By increasing the amount of blood pumped by the heart, increased supplies of oxygen and food are rushed to the working body cells and waste removal is speeded up.

As a rule, the healthy heart can accommodate itself without difficulty to the varying requirements of the body in action. But unusual or unduly violent or prolonged exertion may temporarily damage the heart. A safe rule to follow is to stop exercising when you begin to feel too tired. Before engaging in any form of severe exercise to which you are not accustomed, have a physician examine your heart.

During illness, especially an illness with fever, the rate of the heartbeat may be greatly increased and the heart temporarily weakened. This explains why the physician may keep a person in bed for some time after a severe illness in order to give the heart plenty of time to recover its strength.

The heart is able to keep continuously at work driving forth a heavy load of blood at each beat because it rests between beats. The slower the heart beats, the longer the rest periods will be. When the heart must beat for a long time at a rapid rate, it may not have enough time to rest and to restore itself.

The heart beats more slowly during sleep than at any other time. One of the most important things you can do to keep your heart in good condition is to get a good night's rest each night. A heart that is given a chance to

get enough rest is less likely to break down prematurely than is a heart that is overworked.

Causes of Heart Disease

HEART disease is a general term which covers a number of different diseases of the heart. By this general term is meant any defect in the heart which interferes with its proper functioning.

The most common types of heart disease are caused by:

1. The invasion of the heart by germs or toxins which damage the heart muscle, the valves, the tissue lining the cavity of the heart, or the bag of tissue which surrounds the heart.
2. Overwork of the heart muscle caused by any great or unusual strain, such as that imposed by high blood pressure or disease of the valves.
3. Degenerative disease of the coronary arteries which supply the heart muscle with blood.

“Rheumatic” Heart Disease

An attack of rheumatic fever, mild or severe, very frequently damages the heart. This disease usually occurs during the first three decades of life. The exact cause of rheumatic fever is not known, but it appears to be due to an infection by germs of the streptococcus family or by a virus, or perhaps by a germ and a virus working together.

In the early stages of rheumatic fever various parts of the body may be attacked. When the joints are affected they become swollen, hot and red, tender, and painful. When the muscles are affected they become stiff and sore. In some cases the nervous system is affected and a nervous twitching develops which is known as chorea, or St. Vitus dance. Fever, sweating, weakness, anemia, and loss of weight frequently are present.

A child may have rheumatic fever without seeming to

be ill enough to need medical attention. But even mild aching in a joint or an arm or leg may mean that a child has rheumatic fever. This treacherous disease is responsible for so many cases of heart disease that no parents can afford to belittle as "growing pains" any joint or muscle pains complained of by a child. The only safe procedure is to consult a physician at once and follow his directions. If the child has rheumatic fever, he may have to stay in bed for a long time after the symptoms have disappeared in order to prevent heart damage or a recurrence of the infection.

If the rheumatic infection remains unchecked, inflammation of the heart nearly always occurs. Scarring and weakening of the heart muscle and valves usually result. Damage to the valves allows the blood to leak back in the wrong direction when the heart muscle contracts, so that an abnormal sound or "murmur" is heard by the physician when he uses a stethoscope to listen to the heart. It may also narrow the valve openings so that the heart has to work doubly hard to force the blood through them.

Syphilitic Heart Disease

Syphilis is the next most common infection responsible for heart disease. The germs of syphilis attack particularly the large blood vessel, called the aorta, into which blood is pumped directly from the left side of the heart. Disease of the heart and aorta due to syphilis is not, as a rule, detected until many years after the germs of syphilis have first entered the body. Thorough medical treatment of syphilis in the early, or chancre, stage is of great importance in preventing the development of disease of the heart and aorta later in life.

The Heart in Diphtheria, Scarlet Fever, and Other General Infections

Heart weakness or heart failure during or following an infectious disease, such as diphtheria, scarlet fever, pneumonia, and influenza, is caused as a rule by the poisonous effect on the heart and blood vessels of toxins produced by the germs and by the great strain placed on the heart in helping the body to overcome the infection. Occasionally the germs themselves may be carried by the blood to the heart and find lodging there, with consequent damage to the heart tissues.

The toxin of diphtheria, especially, may attack the heart muscle and cause serious trouble. Recovery, however, almost always means escape from any permanent or serious damage to the heart. Fortunately the use of anti-toxin in the early stages of diphtheria helps to keep the heart from becoming involved. More fortunately still, no child need have diphtheria if his parents have him protected from it by treatment with toxoid or toxin-anti-toxin. Scarlet fever, which is a streptococcus infection, may have an effect on the heart similar to that of rheumatic heart disease. Pneumonia and severe influenza are peculiarly exhausting diseases which place great strain upon the heart. As a result a long rest in bed and a slow return to active life are usually ordered by the physician for the patient who is recovering from an infectious disease which has overtaxed or poisoned the heart.

Focal Infections

In a focal infection the germs are localized in some one part of the body. Common examples are diseased tonsils, tooth abscesses, and infected sinuses.

Although such infections are usually confined to one spot, the blood, as the great common carrier of the body,

may transport germs or their poisons from the seat of infection to other parts of the body. It is not known how frequently actual damage to the heart is caused by focal infections. We do know, however, that heart disease already existing is sometimes made worse by their presence. Physicians view focal infections as probable causes of ill health and usually advise their eradication when this is possible.

High Blood Pressure

“What causes high blood pressure?” has been called one of the most important unanswered questions of medical science. The most acceptable and widely held explanation is that for reasons unknown the smallest arteries (arterioles) contract, or become narrowed, and thus increase the tension or resistance offered by their walls to the passage of blood through them.

More or less constant strain is placed on the heart when it must pump blood into the arteries against an increased pressure. For this reason high blood pressure may produce changes in the heart muscle which impair its working ability.

Heart disease caused by high blood pressure, like high blood pressure itself, is commonest in middle age and after. Factors or conditions associated with high blood pressure are:

Heredity; that is, a tendency to high blood pressure seems to run in families.

Overweight.

Leading a high-tension life; worry, fear, long-continued excitement, and nervous strain.

A certain type of kidney disease.

Disturbances of the ductless glands.

Arteriosclerosis.

The treatment of high blood pressure—which may or may not include a special diet—depends on the conditions which the physician finds associated with it.

Arteriosclerosis

Arteriosclerosis is the term applied to degenerative changes in the arteries. As a result of such changes the walls of the arteries become hard, rigid, and rough on the inside. Arteriosclerosis is common in old age, when it is usually the result of the natural process of aging. It is also associated with abnormal conditions, such as high blood pressure, gout, diabetes, Bright's disease, and infections which damage the arterial walls. Arteriosclerosis frequently causes disturbances in the organs or other structures supplied by the diseased arteries.

The arteries which supply the heart muscle itself with blood are the coronary arteries. When these become stiff and narrow they can no longer carry to the heart muscle the blood necessary to nourish it properly. The severe chest pain known as angina pectoris is frequently due to an insufficient blood supply to the heart muscle, the result of disease of the coronary arteries. Actual starvation of the heart muscle may occur if the narrowing of the coronary arteries goes far enough.

Arteriosclerosis may also lead to thrombus, or blood clot, formation in an artery. The blocking of a coronary artery by a thrombus causes serious interference with the blood supply of the heart muscle. This is called coronary thrombosis.

Symptoms of Heart Disease

BY GIVING rise to certain symptoms the heart announces that it can no longer respond with ease to all the demands placed upon it. In the earlier stages of heart dis-

ease, however, a person may have no feelings of bodily discomfort, or he may ignore or misinterpret warnings which would be plain to a physician. The condition is frequently discovered in the course of a routine physical examination. This is one reason why periodic physical examinations are so important.

Symptoms frequently associated with heart disease are pain, or a feeling of oppression in the front of the chest; marked shortness of breath during or after ordinary exertion; and palpitation, or the sensation of feeling the heart beat rapidly or irregularly. However, the heart may be in a healthy condition even if one or more of these symptoms are present. Only a physician will be able to determine their importance.

Angina pectoris is the type of pain most often heard about in connection with heart disease. It almost always is associated with bodily effort. There is a tendency for the pain to radiate from the chest to the left shoulder and down the arm to the fingers. Angina pectoris, as we have seen, is frequently due to interference with the blood supply of the heart muscle. The symptoms may rarely be caused by a disturbance of function without organic disease.

Shortness of breath during or after ordinary exertion, when due to heart disease, is usually produced by congestion in the blood vessels in the lungs. This happens most commonly because of failure of the left side of the heart to pass blood on from the lungs as fast as it is delivered by the right side into the lungs. Attacks of heavy breathing due to acute failure of the left side of the heart sometimes occur at night. This form of difficult breathing is frequently termed cardiac asthma.

In addition to the symptoms mentioned, there are several others which may or may not be associated with heart disease. Remember that many people who think they have symptoms of heart disease have perfectly normal hearts. Don't worry—but to be on the safe side,

let your physician decide the importance of any persistent feelings of bodily discomfort. Remember, also, that heart disease, when detected in its early stages, may often be arrested.

Some of the Ways in Which the Physician Determines the Condition of the Heart

PROBABLY you have had your blood pressure measured in the course of a regular physical examination. In measuring blood pressure the physician uses an instrument which records the amount of pressure exerted by the blood against the wall of the main artery of the arm. A certain degree of blood pressure is normal for each age. If the pressure is lower than the normal limits, a person is said to have low blood pressure. If it is higher, he is said to have high blood pressure.

If your physician tells you that you have high blood pressure you can be of great help to him in his treatment of your case by keeping calm and following his directions exactly. Some people get so excited on being told that they have high blood pressure that they develop nervous symptoms which make them think they have heart disease, although little or no actual damage to the heart may as yet exist.

By using a stethoscope the physician can listen to the sounds which accompany each stage of the heart's action and detect "murmurs" or other deviations from normal which may or may not indicate weakness in the heart muscle or damage to the valves. By using a fluoroscope he can actually see the heart and near-by blood vessels in silhouette and observe whether or not they are normal in shape and size.

By using an electrocardiograph, the physician can have

a graphic record made of the fall and rise of the minute electric currents generated in the heart muscle as it contracts and relaxes. A study of this record, which is called an electrocardiogram, may tell the physician whether or not the heart muscle is in good condition and its action correct.*

What to Do if You Have Heart Trouble

A PERSON who is told by his physician that he has some form of heart trouble is apt to think that he is doomed to an untimely death. This is not true. Few people realize the wonderful work they can get from an impaired heart by using it skillfully and discreetly. The heart is a remarkable organ which can adapt itself to new conditions and very often compensate for the disturbances due to disease. However, a person whose heart has been damaged needs to regulate his manner of living so that he can give his heart the best possible chance to function adequately. Many patients with heart disease can lead useful and productive lives with but little restriction of their normal activities if they follow the advice of their physician in every respect.

If your physician tells you that you have some form of heart trouble, your chief problem is to understand how to regulate your play and work so that you will get enough but not too much physical exercise. Do not undertake or persist in any physical effort that might be called a strain. Find out from your physician what you may do and what you may not do, and plan your life accordingly.

Proper hours of rest at night are of great importance. When you are asleep the heart gets the most rest. Eight hours in bed should be the minimum—10 are better.

*An electrocardiogram recording the action of a healthy heart is shown on the cover of this pamphlet, at the top. The record of the action of a damaged heart is shown at the bottom.

If you are overweight, your physician may put you on a diet to reduce your weight. Keeping your weight down to normal is one of the ways in which you may avoid placing a strain on the heart.

Follow the instructions the physician gives you for improving your general health so that you will be able to put up a strong resistance to infection. Remember that colds, sore throats, and other diseases due to germs sometimes serve to start a more or less prolonged illness in a person with a weakened heart.

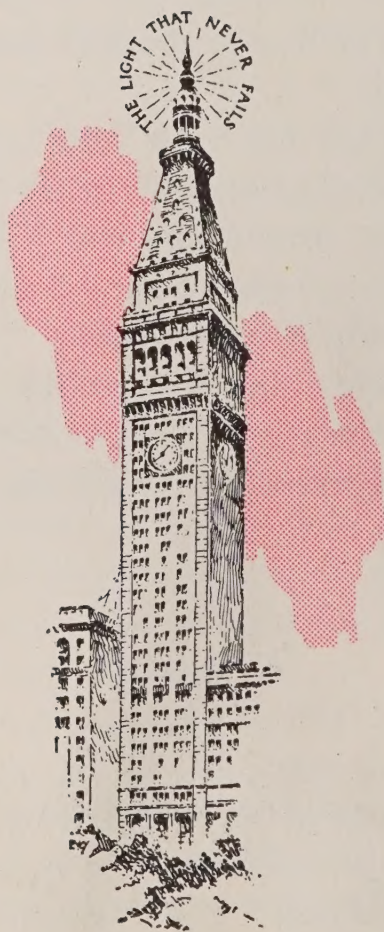
Never take medicine for your heart except by your physician's orders. Some forms of heart disease may be benefited by medicine. But drugs which affect the heart are extremely powerful in their action and must be taken only under careful medical supervision.

Guard against worry and all intense emotional disturbances. The one who wins the fight with heart trouble is the one who leads a serene, well-balanced life.



For information about available clinics for those with heart disease, and for books and pamphlets relating to heart disease, write to the American Heart Association, Inc., 50 West 50th Street, New York, N. Y.





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